

extremely readable, in a style which owes an acknowledged debt to Acton's *Numerical Methods That Work*, one of the few books on numerical analysis which could be described as hard to put down.

It is an indication of the penetration of C that the authors have seen fit to produce a C language edition of their splendid book, to be sold alongside the existing combined FORTRAN and Pascal edition. The numerical recipes are the same, and most of the text is identical. The textual differences are telling, in that they are almost all additions to describe ways of handling the shortcomings of C for scientific programming, including a ten-page

"It is the need for access to facilities which should dictate the programming language used . . ."

discussion of ways of circumventing intrinsic problems with array manipulation, the lack of complex variables and complex arithmetic (for which routines are supplied in an appendix), and the problems of controlling conversion between single and double precision. The publisher claims that this edition "brings to bear on scientific tasks the full power of the operator-rich C language, including dynamic memory allocation, modularization, pointer reference to matrices, structured programming, and much more". Modularization and structured programming are perfectly possible in FORTRAN, Pascal, and many other languages; the remaining attributes of C are things that most scientific programmers would rather not be troubled with.

Throughout the C edition, it is noticeable that, largely as a consequence of uncomfortable array manipulations, the programs are harder to read and to relate to the mathematics than their FORTRAN or Pascal counterparts. Besides the inconvenience of writing scientific programs in C, programs need to be understood if they are to be modified — and most programs need to be modified at some time or other. On these grounds alone, C falls short. Moreover, given that on most machines there is little difference in performance whether we use C, FORTRAN or Pascal, I can see no reason to use a language which is manifestly worse for a particular purpose if a better one is available. It is the use of the language for other than its intended purpose which has brought FORTRAN opprobrium it has not always deserved.

The last thing I desire is that my opinions about scientific programming should be construed as condemnation of this book. If, for whatever reason, you do your scientific programming in C, then buy it — and if you do not, then get the other edition. □

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Money matters

Sharon Cohen

Grant Manager 2.0/Personnel Manager 1.4. Niles and Associates, 2200 Powell, Suite 765, Emeryville, California 94608. \$425 (if purchased separately), \$740 (combined).

APPLYING for grants, budgeting grant funds and accounting for how the money is spent are not pleasurable activities. Computers should accelerate and simplify grant management. Until recently there were a limited number of effective software programs for this purpose.

Grant Manager is an accounting program expressly designed for the management of research and training grants, contracts and departmental budgets. It is of value to individual researchers with only a few grants — but from several different sources — and to departmental administrators who must monitor many types of grant. *Grant Manager* can provide the answers to such questions as: Does my National Institutes of Health grant have any funds remaining in the equipment category? How much money do I have in each of my grants and contracts as of today? Where do I usually buy caesium chloride? How much do I normally spend

order form.

Grant Manager can perform searches for orders or specific items, and can list how much has been spent on supplies, personnel, radiation protection or other costs over a specified period of time for each of the accounts entered. When chemistry supplies are running low, a simple search allows one to find out when the last batch was ordered, how much it cost, which vendor was used and the catalogue number. This feature allows for easier budgeting, and saves hours of rummaging through old files.

The program maintains current balances on all accounts and simplifies ledger reconciliations. A new balance is created each time the data are amended. The ledger reconciliation module shortens the time required to match ledger items to the program's records. Overdrafts and unspent funds left over from a particular budget period should be a thing of the past.

Tracking vendor histories is vital for those involved in purchasing. The program provides details of gross costs, delivery dates and volume, thus making negotiation of discounts easier.

Personnel Manager complements *Grant Manager* and allows personnel costs to be included in the grant-tracking process. By allocating such costs for the entire budget period, researchers and administrators

GRANT MANAGER ITEM SOURCE			
VENDOR	ITEM DESCRIPTION	ORDERED	
AMERICAN SCIENTIFIC PRODUCTS	25330-50 Corning Centrifuge Tubes 50ml	07/04/85	
AMERICAN SCIENTIFIC PRODUCTS	25310-15 15ml Centrifuge Tubes	07/04/85	
BECKMAN INSTRUMENTS	#342414 Quick seal tubes for VT50 rotor	05/17/85	
BECKMAN INSTRUMENTS	#344090 Ultra Clear Tubes 3/16 x 1 5/8"	05/17/85	
BECKMAN INSTRUMENTS	#344057 Ultra Clear Tubes 1/2 x 2"	05/17/85	
BECKMAN INSTRUMENTS	326823 Polyallomer Tubes (3 1/2"x1")	05/31/85	
BECKMAN INSTRUMENTS	337986 Polyallomer Tubes 5/8"x4"	06/05/85	
GENINT SCIENTIFIC COMPANY	505 Micro Centrifuge tubes 1.5ml 500/bag	06/01/85	

Grant Manager search of previously ordered items. Here the search term was 'tubes'.

on supplies each month? Can I afford to hire a technician? Over the past three years I have been getting answers to these questions for 30 faculty members with 135 grants. The results have surpassed all expectations.

The program offers several advantages over conventional spreadsheets in purchase-order processing, searching, ledger reconciliation and vendor archiving. It is logically organized with various pop-up menus. Each screen looks like an empty form, containing boxes that need to be filled in. Once the form is completed, specific function keys or a simple carriage return execute the various tasks.

The purchase-order processing function allows entry of the order, with minimal repeat typing; if the item has been ordered before, then by checking the catalogue and marking the items, a new order can be generated and printed. The format of the order can be customized to print on any

can more easily have accurate figures for expendables. The program is divided into two parts — figures on the actual cost for each person, computed from their hourly or monthly rate of pay plus fringe benefits, and a break-down by grant of the percentage of that person's effort spent on each specific project. Printouts can be generated by grant to show the cost of a technician for each pay period or a summary of all personnel costs associated with a grant.

Both programs run on IBM-PC and compatible computers with a 512K RAM. I recommend the use of a computer with a 30–40 Mb hard drive, if the programs will be used to track a large number of grants or if the data need to be kept for a few years. *Grant Manager* is also available for the Apple Macintosh. □

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